

SEQUENCE LISTING

<110> Deisher, Theresa A.
Conklin, Darrell C.
Raymond, Fenella
Bukowski, Thomas R.
Holderman, Susan D.
Hansen, Birgit
Sheppard, Paul O.

<120> NOVEL FGF HOMOLOGS

<130> 96-20C1

<160> 43

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 917

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(621)

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1				5				10						15		

ctg	ctg	tgc	ttc	cag	gta	cag	gtg	ctg	gtt	gcc	gag	gag	aac	gtg	gac	96
Leu	Leu	Cys	Phe	Gln	Val	Gln	Val	Leu	Val	Ala	Glu	Glu	Asn	Val	Asp	
			20					25					30			

ttc	cgc	atc	cac	gtg	gag	aac	cag	acg	cgg	gct	cgg	gac	gat	gtg	agc	144
Phe	Arg	Ile	His	Val	Glu	Asn	Gln	Thr	Arg	Ala	Arg	Asp	Asp	Val	Ser	
		35					40					45				

cgt	aag	cag	ctg	cgg	ctg	tac	cag	ctc	tac	agc	cgg	acc	agt	ggg	aaa	192
Arg	Lys	Gln	Leu	Arg	Leu	Tyr	Gln	Leu	Tyr	Ser	Arg	Thr	Ser	Gly	Lys	
	50					55					60					

cac atc cag gtc ctg ggc cgc agg atc agt gcc cgc ggc gag gat ggg 240
 His Ile Gln Val Leu Gly Arg Arg Ile Ser Ala Arg Gly Glu Asp Gly
 65 70 75 80

gac aag tat gcc cag ctc cta gtg gag aca gac acc ttc ggt agt caa 288
 Asp Lys Tyr Ala Gln Leu Leu Val Glu Thr Asp Thr Phe Gly Ser Gln
 85 90 95

gtc cgg atc aag ggc aag gag acg gaa ttc tac ctg tgc atg aac cgc 336
 Val Arg Ile Lys Gly Lys Glu Thr Glu Phe Tyr Leu Cys Met Asn Arg
 100 105 110

aaa ggc aag ctc gtg ggg aag ccc gat ggc acc agc aag gag tgt gtg 384
 Lys Gly Lys Leu Val Gly Lys Pro Asp Gly Thr Ser Lys Glu Cys Val
 115 120 125

ttc atc gag aag gtt ctg gag aac aac tac acg gcc ctg atg tcg gct 432
 Phe Ile Glu Lys Val Leu Glu Asn Asn Tyr Thr Ala Leu Met Ser Ala
 130 135 140

aag tac tcc ggc tgg tac gtg ggc ttc acc aag aag ggg cgg ccg cgg 480
 Lys Tyr Ser Gly Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg Pro Arg
 145 150 155 160

aag ggc ccc aag acc cgg gag aac cag cag gac gtg cat ttc atg aag 528
 Lys Gly Pro Lys Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys
 165 170 175

cgc tac ccc aag ggg cag ccg gag ctt cag aag ccc ttc aag tac acg 576
 Arg Tyr Pro Lys Gly Gln Pro Glu Leu Gln Lys Pro Phe Lys Tyr Thr
 180 185 190

acg gtg acc aag agg tcc cgt cgg atc cgg ccc aca cac cct gcc 621
 Thr Val Thr Lys Arg Ser Arg Ile Arg Pro Thr His Pro Ala
 195 200 205

taggccaccc cgccgcggcc ctcaggtcgc cctggccaca ctcacactcc cagaaaactg 681
 catcagagga atatitttac atgaaaaata aggattttat tgttgacttg aaacccccga 741
 tgacaaaaga ctcacgcaaa gggactgtag tcaaccaca ggtgcttgtc tctctctagg 801
 aacagacaac tctaaactcg tccccagagg aggacttgaa tgaggaaacc aacactttga 861
 gaaaccaaag tcctttttcc caaaggttct gaaaaaaaaa aaaaaaaaaa ctcgag 917

<210> 2

<211> 207

<212> PRT

<213> Homo sapiens

<400> 2

Met Tyr Ser Ala Pro Ser Ala Cys Thr Cys Leu Cys Leu His Phe Leu
 1 5 10 15
 Leu Leu Cys Phe Gln Val Gln Val Leu Val Ala Glu Glu Asn Val Asp
 20 25 30
 Phe Arg Ile His Val Glu Asn Gln Thr Arg Ala Arg Asp Asp Val Ser
 35 40 45
 Arg Lys Gln Leu Arg Leu Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys
 50 55 60
 His Ile Gln Val Leu Gly Arg Arg Ile Ser Ala Arg Gly Glu Asp Gly
 65 70 75 80
 Asp Lys Tyr Ala Gln Leu Leu Val Glu Thr Asp Thr Phe Gly Ser Gln
 85 90 95
 Val Arg Ile Lys Gly Lys Glu Thr Glu Phe Tyr Leu Cys Met Asn Arg
 100 105 110
 Lys Gly Lys Leu Val Gly Lys Pro Asp Gly Thr Ser Lys Glu Cys Val
 115 120 125
 Phe Ile Glu Lys Val Leu Glu Asn Asn Tyr Thr Ala Leu Met Ser Ala
 130 135 140
 Lys Tyr Ser Gly Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg Pro Arg
 145 150 155 160
 Lys Gly Pro Lys Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys
 165 170 175
 Arg Tyr Pro Lys Gly Gln Pro Glu Leu Gln Lys Pro Phe Lys Tyr Thr
 180 185 190
 Thr Val Thr Lys Arg Ser Arg Arg Ile Arg Pro Thr His Pro Ala
 195 200 205

<210> 3

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC11676

<400> 3

ggacttgact accgaaggtg tctg

24

<210> 4

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC11677

<400> 4

gtc gatgtga gccgtaagca gct

23

<210> 5

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC12053

<400> 5

gcatacttgt ccccatcctc gccgcg

26

<210> 6

<211> 621

<212> DNA

<213> Artificial Sequence

<220>

<223> degenerate sequence

<221> variation

<222> (1)...(621)

<223> n is any nucleotide

<400> 6

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cargtn carg tnytngtngc ngargaraay gtngayttym gnathgaygt ngaraarcar	120
acnmgn gcnm gngaygaygt nwsnmgnaar carytnmgny tntaycaryt ntaywsnmgn	180
acnwsnggna arcayathca rgtntynggn mgnmgnathw sngcnmgngg ngargayggn	240
gayaartayg cncarytnyt ngtn garacn gayacnttyg gnwsncargt nmgnathaar	300
ggnaargara cngarttyta yytn tgyatg aaymgnaarg gnaarytngt nggnaarccn	360
gayggnacnw snaargartg ygtnttyath garaargtny tngaraayaa ytayacngcn	420
ytnatgwsng cnaartayws nggntggtay gtnggnttya cnaaraargg nmgnccnmgn	480
aarggnccna aracnmnga raaycarcar gaygtncayt tyatgaarmg ntayccnaar	540
ggncarccng arytn caraa rcnttyaar tayachacng tnacnaarmg nwsnmgnmgn	600
athmgnccna cncayccngc n	621

<210> 7

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC12652

<400> 7

tatttatcta gactggttcc gcgtgccgcc gaggagaacg tggactt

47

<210> 8

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC12631

<400> 8

gtatttgtcg actcaggcag ggtgtgtggg ccg

33

<210> 9

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC15290

<400> 9

gccgaggaga acgtggactt cc

22

<210> 10

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC15270

<400> 10

tatttatcta gagatgacga tgacaaggcc gaggagaacg tggactt

47

<210> 11

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC13497

<400> 11

agcattgcta aagaagaagg tgtaagcttg gacaagagag a

41

<210> 12

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC15131

<400> 12

ggtgtaagct tggacaagag agaggagaac gtggacttcc gcatccacgt ggagaaccag
acg

60

63

<210> 13

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC15134

<400> 13

ccggctgtag agctggtaca gccgcagctg cttacggct

39

<210> 14

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC13529

<400> 14

cttcagaagc cttcaagta cacgacggtg accaagaggt cc

42

<210> 15

<211> 61

<212> DNA

1008147-02106

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC13525

<400> 15

acgacggtga ccaagaggtc ccgtcggatc cgccccacac accctgccta gggggaattc 60
g 61

<210> 16

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC13526

<400> 16

caaacaggca gccctagaat actagtgtcg actcgaggat ccgaattccc cctaggcagg 60
g 61

<210> 17

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC13528

<400> 17

ctcaaaaatt ataaaaatat ccaaacaggc agccctagaa tact 44

<210> 18

<211> 186

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer ZC15132

<400> 18

gtaccgag cagttcccg caatccctcc ccccttacac aggatgtcca tattaggaca 60
tctgcgtctc gaggccaccg tggttgagcc cgacactcat tcataaaacg cttgttataa 120
aagcagtggc tgcggcgccct cgtactccaa ccgcatctgc agcgagcaac tgagaagcca 180
aggatc 186

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<210> 19
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 <213> Artificial Sequence

<220>
 <223> 5' linker sequence

<400> 19
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 cgcattccacg tggagaacca gacgcgggct cgggacgatg tgagccgtaa gcagctgcgg 120
 ctgtaccagc tctacagccg g 141

<210> 20
 <211> 144
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 3' linker sequence

<400> 20
 cttcagaagc ctttcaagta cacgacggtg accaagaggt cccgtcggat ccggcccaca 60
 caccctgcct agggggaatt cggatcctcg agtcgacact agtattctag ggctgcctgt 120
 ttgatatttt ttataatttt tgag 144

<210> 21
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 21
 Met Ala Ala Ala Ile Ala Ser Ser Leu Ile Arg Gln Lys Arg Gln Ala
 1 5 10 15
 Arg Glu Ser Asn Ser Asp Arg Val Ser Ala Ser Lys Arg Arg Ser Ser
 20 25 30
 Pro Ser Lys Asp Gly Arg Ser Leu Cys Glu Arg His Val Leu Gly Val
 35 40 45
 Phe Ser Lys Val Arg Phe Cys Ser Gly Arg Lys Arg Pro Val Arg Arg
 50 55 60
 Arg Pro Glu Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Phe Ser Gln
 65 70 75 80
 Gln Gly Tyr Phe Leu Gln Met His Pro Asp Gly Thr Ile Asp Gly Thr
 85 90 95

Lys Asp Glu Asn Ser Asp Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly
 100 105 110
 Leu Arg Val Val Ala Ile Gln Gly Val Lys Ala Ser Leu Tyr Val Ala
 115 120 125
 Met Asn Gly Glu Gly Tyr Leu Tyr Ser Ser Asp Val Phe Thr Pro Glu
 130 135 140
 Cys Lys Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser
 145 150 155 160
 Ser Thr Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly
 165 170 175
 Leu Asn Lys Glu Gly Gln Ile Met Lys Gly Asn Arg Val Lys Lys Thr
 180 185 190
 Lys Pro Ser Ser His Phe Val Pro Lys Pro Ile Glu Val Cys Met Tyr
 195 200 205
 Arg Glu Pro Ser Leu His Glu Ile Gly Glu Lys Gln Gly Arg Ser Arg
 210 215 220
 Lys Ser Ser Gly Thr Pro Thr Met Asn Gly Gly Lys Val Val Asn Gln
 225 230 235 240
 Asp Ser Thr

<210> 22
 <211> 168
 <212> PRT
 <213> Homo sapiens

<400> 22
 Met Ala Ser Lys Glu Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Phe
 1 5 10 15
 Ser Gln Gln Gly Tyr Phe Leu Gln Met His Pro Asp Gly Thr Ile Asp
 20 25 30
 Gly Thr Lys Asp Glu Asn Ser Asp Tyr Thr Leu Phe Asn Leu Ile Pro
 35 40 45
 Val Gly Leu Arg Val Val Ala Ile Gln Gly Val Lys Ala Ser Leu Tyr
 50 55 60
 Val Ala Met Asn Gly Glu Gly Tyr Leu Tyr Ser Ser Asp Val Phe Thr
 65 70 75 80
 Pro Glu Cys Lys Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile
 85 90 95
 Tyr Ser Ser Thr Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe
 100 105 110
 Leu Gly Leu Asn Lys Glu Gly Gln Ile Met Lys Gly Asn Arg Val Glu
 115 120 125
 Lys Thr Lys Pro Ser Ser His Phe Val Pro Lys Pro Ile Glu Val Cys
 130 135 140

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Met Tyr Arg Glu Pro Ser Leu His Glu Ile Gly Glu Asn Lys Gly Val
 145 150 155 160
 Gln Gly Lys Phe Trp Thr Pro Pro
 165

<210> 23

<211> 247

<212> PRT

<213> Homo sapiens

<400> 23

Met Ala Ala Ala Ile Ala Ser Gly Leu Ile Arg Gln Lys Arg Gln Ala
 1 5 10 15
 Arg Glu Gln His Trp Asp Arg Pro Ser Ala Ser Arg Arg Arg Ser Ser
 20 25 30
 Pro Ser Lys Asn Arg Gly Leu Cys Asn Gly Asn Leu Val Asp Ile Phe
 35 40 45
 Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg Leu Arg Arg Gln
 50 55 60
 Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly
 65 70 75 80
 Tyr Tyr Leu Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp
 85 90 95
 Asp Ser Thr Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg
 100 105 110
 Val Val Ala Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn
 115 120 125
 Gly Glu Gly Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys
 130 135 140
 Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met
 145 150 155 160
 Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn
 165 170 175
 Lys Glu Gly Gln Ala Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro
 180 185 190
 Ala Ala His Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu
 195 200 205
 Pro Ser Leu His Asp Val Gly Glu Thr Val Pro Lys Pro Gly Val Thr
 210 215 220
 Pro Ser Lys Ser Thr Ser Ala Ser Ala Ile Met Asn Gly Gly Lys Pro
 225 230 235 240
 Val Asn Lys Ser Lys Thr Thr
 245

<210> 24

<211> 245
 <212> PRT
 <213> Homo sapiens

<400> 24

Met Ala Ala Ala Ile Ala Ser Ser Leu Ile Arg Gln Lys Arg Gln Ala
 1 5 10 15
 Arg Glu Arg Glu Lys Ser Asn Ala Cys Lys Cys Val Ser Ser Pro Ser
 20 25 30
 Lys Gly Lys Thr Ser Cys Asp Lys Asn Lys Leu Asn Val Phe Ser Arg
 35 40 45
 Val Lys Leu Phe Gly Ser Lys Lys Arg Arg Arg Arg Arg Pro Glu Pro
 50 55 60
 Gln Leu Lys Gly Ile Val Thr Lys Leu Tyr Ser Arg Gln Gly Tyr His
 65 70 75 80
 Leu Gln Leu Gln Ala Asp Gly Thr Ile Asp Gly Thr Lys Asp Glu Asp
 85 90 95
 Ser Thr Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val
 100 105 110
 Ala Ile Gln Gly Val Gln Thr Lys Leu Tyr Leu Ala Met Asn Ser Glu
 115 120 125
 Gly Tyr Leu Tyr Thr Ser Glu Leu Phe Thr Pro Glu Cys Lys Phe Lys
 130 135 140
 Glu Ser Val Phe Glu Asn Tyr Tyr Val Thr Tyr Ser Ser Met Ile Tyr
 145 150 155 160
 Arg Gln Gln Gln Ser Gly Arg Gly Trp Tyr Leu Gly Leu Asn Lys Glu
 165 170 175
 Gly Glu Ile Met Lys Gly Asn His Val Lys Lys Asn Lys Pro Ala Ala
 180 185 190
 His Phe Leu Pro Lys Pro Leu Lys Val Ala Met Tyr Lys Glu Pro Ser
 195 200 205
 Leu His Asp Leu Thr Glu Phe Ser Arg Ser Gly Ser Gly Thr Pro Thr
 210 215 220
 Lys Ser Arg Ser Val Ser Gly Val Leu Asn Gly Gly Lys Ser Met Ser
 225 230 235 240
 His Asn Glu Ser Thr
 245

<210> 25
 <211> 225
 <212> PRT
 <213> Homo sapiens

<400> 25

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Met Ala Ala Leu Ala Ser Ser Leu Ile Arg Gln Lys Arg Glu Val Arg
 1 5 10 15
 Glu Pro Gly Gly Ser Arg Pro Val Ser Ala Gln Arg Arg Val Cys Pro
 20 25 30
 Arg Gly Thr Lys Ser Leu Cys Gln Lys Gln Leu Leu Ile Leu Leu Ser
 35 40 45
 Lys Val Arg Leu Cys Gly Gly Arg Pro Ala Arg Pro Asp Arg Gly Pro
 50 55 60
 Glu Pro Gln Leu Lys Gly Ile Val Thr Lys Leu Phe Cys Arg Gln Gly
 65 70 75 80
 Phe Tyr Leu Gln Ala Asn Pro Asp Gly Ser Ile Gln Gly Thr Pro Glu
 85 90 95
 Asp Thr Ser Ser Phe Thr His Phe Asn Leu Ile Pro Val Gly Leu Arg
 100 105 110
 Val Val Thr Ile Gln Ser Ala Lys Leu Gly His Tyr Met Ala Met Asn
 115 120 125
 Ala Glu Gly Leu Leu Tyr Ser Ser Pro His Phe Thr Ala Glu Cys Arg
 130 135 140
 Phe Lys Glu Cys Val Phe Glu Asn Tyr Tyr Val Leu Tyr Ala Ser Ala
 145 150 155 160
 Leu Tyr Arg Gln Arg Arg Ser Gly Arg Ala Trp Tyr Leu Gly Leu Asp
 165 170 175
 Lys Glu Gly Gln Val Met Lys Gly Asn Arg Val Lys Lys Thr Lys Ala
 180 185 190
 Ala Ala His Phe Leu Pro Lys Leu Glu Val Ala Met Tyr Gln Glu
 195 200 205
 Pro Ser Leu His Ser Val Pro Glu Ala Ser Pro Ser Ser Pro Pro Ala
 210 215 220
 Pro
 225

<210> 26

<211> 206

<212> PRT

<213> Homo sapiens

<400> 26

Met Ser Gly Pro Gly Thr Ala Ala Val Ala Leu Leu Pro Ala Val Leu
 1 5 10 15
 Leu Ala Leu Leu Ala Pro Trp Ala Gly Arg Gly Gly Ala Ala Ala Pro
 20 25 30
 Thr Ala Pro Asn Gly Thr Leu Glu Ala Glu Leu Glu Arg Arg Trp Glu
 35 40 45
 Ser Leu Val Ala Leu Ser Leu Ala Arg Leu Pro Val Ala Ala Gln Pro
 50 55 60

Lys Glu Ala Ala Val Gln Ser Gly Ala Gly Asp Tyr Leu Leu Gly Ile
 65 70 75 80
 Lys Arg Leu Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe His Leu
 85 90 95
 Gln Ala Leu Pro Asp Gly Arg Ile Gly Gly Ala His Ala Asp Thr Arg
 100 105 110
 Asp Ser Leu Leu Glu Leu Ser Pro Val Glu Arg Gly Val Val Ser Ile
 115 120 125
 Phe Gly Val Ala Ser Arg Phe Phe Val Ala Met Ser Ser Lys Gly Lys
 130 135 140
 Leu Tyr Gly Ser Pro Phe Phe Thr Asp Glu Cys Thr Phe Lys Glu Ile
 145 150 155 160
 Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Tyr Lys Tyr Pro Gly
 165 170 175
 Met Phe Ile Ala Leu Ser Lys Asn Gly Lys Thr Lys Lys Gly Asn Arg
 180 185 190
 Val Ser Pro Thr Met Lys Val Thr His Phe Leu Pro Arg Leu
 195 200 205

<210> 27

<211> 208

<212> PRT

<213> Homo sapiens

<400> 27

Met Ala Leu Gly Gln Lys Leu Phe Ile Thr Met Ser Arg Gly Ala Gly
 1 5 10 15
 Arg Leu Gln Gly Thr Leu Trp Ala Leu Val Phe Leu Gly Ile Leu Val
 20 25 30
 Gly Met Val Val Pro Ser Pro Ala Gly Thr Arg Ala Asn Asn Thr Leu
 35 40 45
 Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu Ser Arg Ser Arg Ala Gly
 50 55 60
 Leu Ala Gly Glu Ile Ala Gly Val Asn Trp Glu Ser Gly Tyr Leu Val
 65 70 75 80
 Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe
 85 90 95
 His Leu Gln Val Leu Pro Asp Gly Arg Ile Ser Gly Thr His Glu Glu
 100 105 110
 Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly Val Val
 115 120 125
 Ser Leu Phe Gly Val Arg Ser Ala Leu Phe Val Ala Met Asn Ser Lys
 130 135 140
 Gly Arg Leu Tyr Ala Thr Pro Ser Phe Gln Glu Cys Lys Phe Arg
 145 150 155 160

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Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp Leu Tyr
 165 170 175
 Gln Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly
 180 185 190
 Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile
 195 200 205

<210> 28
 <211> 155
 <212> PRT
 <213> Homo sapiens

<400> 28
 Met Ala Ala Gly Ser Ile Thr Thr Leu Pro Ala Leu Pro Glu Asp Gly
 1 5 10 15
 Gly Ser Gly Ala Phe Pro Pro Gly His Phe Lys Asp Pro Lys Arg Leu
 20 25 30
 Tyr Cys Lys Asn Gly Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg
 35 40 45
 Val Asp Gly Val Arg Glu Lys Ser Asp Pro His Ile Lys Leu Gln Leu
 50 55 60
 Gln Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn
 65 70 75 80
 Arg Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys
 85 90 95
 Val Thr Asp Glu Cys Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr
 100 105 110
 Asn Thr Tyr Arg Ser Arg Lys Tyr Thr Ser Trp Tyr Val Ala Leu Lys
 115 120 125
 Arg Thr Gly Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln Lys
 130 135 140
 Ala Ile Leu Phe Leu Pro Met Ser Ala Lys Ser
 145 150 155

<210> 29
 <211> 155
 <212> PRT
 <213> Homo sapiens

<400> 29
 Met Ala Glu Gly Glu Ile Thr Thr Phe Thr Ala Leu Thr Glu Lys Phe
 1 5 10 15
 Asn Leu Pro Pro Gly Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser
 20 25 30

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Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly
 35 40 45
 Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu
 50 55 60
 Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu
 65 70 75 80
 Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu
 85 90 95
 Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr
 100 105 110
 Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys
 115 120 125
 Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala
 130 135 140
 Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
 145 150 155

<210> 30
 <211> 208
 <212> PRT
 <213> Homo sapiens

<400> 30
 Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
 1 5 10 15
 Pro Gly Cys Cys Cys Cys Phe Leu Leu Phe Leu Val Ser Ser
 20 25 30
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly
 50 55 60
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140
 Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
 145 150 155 160
 Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
 165 170 175

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Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
 180 185 190
 Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 195 200 205

<210> 31
 <211> 194
 <212> PRT
 <213> Homo sapiens

<400> 31

Met His Lys Trp Ile Leu Thr Trp Ile Leu Pro Thr Leu Leu Tyr Arg
 1 5 10 15
 Ser Cys Phe His Ile Ile Cys Leu Val Gly Thr Ile Ser Leu Ala Cys
 20 25 30
 Asn Asp Met Thr Pro Glu Gln Met Ala Thr Asn Val Asn Cys Ser Ser
 35 40 45
 Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile
 50 55 60
 Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp
 65 70 75 80
 Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Asn Tyr Asn
 85 90 95
 Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly
 100 105 110
 Val Glu Ser Glu Phe Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr
 115 120 125
 Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu
 130 135 140
 Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Asn Gly
 145 150 155 160
 Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Arg Gly
 165 170 175
 Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala
 180 185 190
 Ile Thr

<210> 32
 <211> 233
 <212> PRT
 <213> Homo sapiens

<400> 32

Met Gly Ser Pro Arg Ser Ala Leu Ser Cys Leu Leu Leu His Leu Leu
 1 5 10 15
 Val Leu Cys Leu Gln Ala Gln Glu Gly Pro Gly Arg Gly Pro Ala Leu
 20 25 30
 Gly Arg Glu Leu Ala Ser Leu Phe Arg Ala Gly Arg Glu Pro Gln Gly
 35 40 45
 Val Ser Gln Gln His Val Arg Glu Gln Ser Leu Val Thr Asp Gln Leu
 50 55 60
 Ser Arg Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser Gly
 65 70 75 80
 Lys His Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala Glu
 85 90 95
 Asp Gly Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Phe Gly
 100 105 110
 Ser Arg Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys Met
 115 120 125
 Asn Lys Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys Asp
 130 135 140
 Cys Val Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu Gln
 145 150 155 160
 Asn Ala Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg
 165 170 175
 Pro Arg Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His Phe
 180 185 190
 Met Lys Arg Leu Pro Arg Gly His His Thr Thr Glu Gln Ser Leu Arg
 195 200 205
 Phe Glu Phe Leu Asn Tyr Pro Pro Phe Thr Arg Ser Leu Arg Gly Ser
 210 215 220
 Gln Arg Thr Trp Ala Pro Glu Pro Arg
 225 230

<210> 33

<211> 268

<212> PRT

<213> Homo sapiens

<400> 33

Met Ser Leu Ser Phe Leu Leu Leu Leu Phe Phe Ser His Leu Ile Leu
 1 5 10 15
 Ser Ala Trp Ala His Gly Glu Lys Arg Leu Ala Pro Lys Gly Gln Pro
 20 25 30
 Gly Pro Ala Ala Thr Asp Arg Asn Pro Ile Gly Ser Ser Ser Arg Gln
 35 40 45
 Ser Ser Ser Ser Ala Met Ser Ser Ser Ser Ala Ser Ser Ser Pro Ala
 50 55 60

Ala Ser Leu Gly Ser Gln Gly Ser Gly Leu Glu Gln Ser Ser Phe Gln
65 70 75 80
Trp Ser Pro Ser Gly Arg Arg Thr Gly Ser Leu Tyr Cys Arg Val Gly
85 90 95
Ile Gly Phe His Leu Gln Ile Tyr Pro Asp Gly Lys Val Asn Gly Ser
100 105 110
His Glu Ala Asn Met Leu Ser Val Leu Glu Ile Phe Ala Val Ser Gln
115 120 125
Gly Ile Val Gly Ile Arg Gly Val Phe Ser Asn Lys Phe Leu Ala Met
130 135 140
Ser Lys Lys Gly Lys Leu His Ala Ser Ala Lys Phe Thr Asp Asp Cys
145 150 155 160
Lys Phe Arg Glu Arg Phe Gln Glu Asn Ser Tyr Asn Thr Tyr Ala Ser
165 170 175
Ala Ile His Arg Thr Glu Lys Thr Gly Arg Glu Trp Tyr Val Ala Leu
180 185 190
Asn Lys Arg Gly Lys Ala Lys Arg Gly Cys Ser Pro Arg Val Lys Pro
195 200 205
Gln His Ile Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln
210 215 220
Pro Glu Leu Ser Phe Thr Val Thr Val Pro Glu Lys Lys Asn Pro Pro
225 230 235 240
Ser Pro Ile Lys Ser Lys Ile Pro Leu Ser Ala Pro Arg Lys Asn Thr
245 250 255
Asn Ser Val Lys Tyr Arg Leu Lys Phe Arg Phe Gly
260 265

<210> 34

<211> 208

<212> PRT

<213> Homo sapiens

<400> 34

Met Ala Pro Leu Gly Glu Val Gly Asn Tyr Phe Gly Val Gln Asp Ala
1 5 10 15
Val Pro Phe Gly Asn Val Pro Val Leu Pro Val Asp Ser Pro Val Leu
20 25 30
Leu Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly
35 40 45
Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg
50 55 60
Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly
65 70 75 80
Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu
85- 90 95

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Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser
 100 105 110
 Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu
 115 120 125
 Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp
 130 135 140
 Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg
 145 150 155 160
 Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr
 165 170 175
 Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val
 180 185 190
 Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser
 195 200 205

<210> 35

<211> 239

<212> PRT

<213> Homo sapiens

<400> 35

Met Gly Leu Ile Trp Leu Leu Leu Leu Ser Leu Leu Glu Pro Gly Trp
 1 5 10 15
 Pro Ala Ala Gly Pro Gly Ala Arg Leu Arg Arg Asp Ala Gly Gly Arg
 20 25 30
 Gly Gly Val Tyr Glu His Leu Gly Ala Pro Arg Arg Arg Lys Leu
 35 40 45
 Tyr Cys Ala Thr Lys Tyr His Leu Gln Leu His Pro Ser Gly Arg Val
 50 55 60
 Asn Gly Ser Leu Glu Asn Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala
 65 70 75 80
 Val Glu Val Gly Ile Val Ala Ile Arg Gly Leu Phe Ser Gly Arg Tyr
 85 90 95
 Leu Ala Met Asn Lys Arg Gly Arg Leu Tyr Ala Ser Glu His Tyr Ser
 100 105 110
 Ala Glu Cys Glu Phe Val Glu Arg Ile His Glu Leu Gly Tyr Asn Thr
 115 120 125
 Tyr Ala Ser Arg Leu Tyr Arg Thr Val Ser Ser Thr Pro Gly Ala Arg
 130 135 140
 Arg Gln Pro Ser Ala Glu Arg Leu Trp Tyr Val Ser Val Asn Gly Lys
 145 150 155 160
 Gly Arg Pro Arg Arg Gly Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser
 165 170 175
 Leu Phe Leu Pro Arg Val Leu Asp His Arg Asp His Glu Met Val Arg
 180 185 190

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Gln Leu Gln Ser Gly Leu Pro Arg Pro Pro Gly Lys Gly Val Gln Pro
 195 200 205
 Arg Arg Arg Arg Gln Lys Gln Ser Pro Asp Asn Leu Glu Pro Ser His
 210 215 220
 Val Gln Ala Ser Arg Leu Gly Ser Gln Leu Glu Ala Ser Ala His
 225 230 235

<210> 36
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> FGF family motif

<221> VARIANT
 <222> (1)...(11)
 <223> Xaa is any amino acid

<400> 36
 Cys Xaa Phe Xaa Glu Glu Glu Glu Glu Tyr
 1 5 10

<210> 37
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> dibasic cleavage peptide

<221> VARIANT
 <222> (2)...(3)
 <223> Xaa is any amino acid

<400> 37
 Arg Xaa Xaa Arg
 1

<210> 38
 <211> 1023
 <212> DNA
 <213> Mus musculus

<220>

20130704 10081347 000100

$\langle 222 \rangle$ (1)...(624)

atg tat tca gcg ccc tcc gcc tgc act tgc ctg tgt tta cac ttt cta 48
Met Tyr Ser Ala Pro Ser Ala Cys Thr Cys Leu Cys Leu His Phe Leu
1 5 10 15

ctg ctg tgc ttc cag gtt cag gtg ttg gca gcc gag gag aat gtg gac 96
Leu Leu Cys Phe Gln Val Gln Val Leu Ala Ala Glu Glu Asn Val Asp
20 25 30

ttc cgc atc cac gtg gag aac cag acg cgg gct cga gat gat gtg agt 144
Phe Arg Ile His Val Glu Asn Gln Thr Arg Ala Arg Asp Asp Val Ser
35 40 45

cgg aag cag ctg cgc ttg tac cag ctc tat agc agg acc agt ggg aag 192
Arg Lys Gln Leu Arg Leu Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys
50 55 60

cac att caa gtc ctg ggc cgt agg atc agt gcc cgt ggc gag gac ggg 240
His Ile Gln Val Leu Gly Arg Arg Ile Ser Ala Arg Gly Glu Asp Gly
65 70 75 80

gac aag tat gcc cag ctc cta gtg gag aca gat acc ttc ggg agt caa 288
Asp Lys Tyr Ala Gln Leu Leu Val Glu Thr Asp Thr Phe Gly Ser Gln
 * 85 90 95

gtc cgg atc aag ggc aag gag aca gaa ttc tac ctg tgt atg aac cga 336
Val Arg Ile Lys Gly Lys Glu Thr Glu Phe Tyr Leu Cys Met Asn Arg
100 105 110

aaa ggc aag ctc gtg ggg aag cct gat ggt act agc aag gag tgc gtg 384
Lys Gly Lys Leu Val Gly Lys Pro Asp Gly Thr Ser Lys Glu Cys Val
115 120 125

ttc att gag aag gtt ctg gaa aac aac tac acg gcc ctg atg tct gcc 432
Phe Ile Glu Lys Val Leu Glu Asn Asn Tyr Thr Ala Leu Met Ser Ala
130 135 140

aag tac tct ggt tgg tat gtg ggc ttc acc aag aag ggg cgg cct cgc 480
Lys Tyr Ser Gly Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg Pro Arg
145 150 155 160

aag ggt ccc aag acc cgc gag aac cag caa gat gta cac ttc atg aag 528
 Lys Gly Pro Lys Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys
 165 170 175

cgt tac ccc aag gga cag gcc gag ctg cag aag ccc ttc aaa tac acc 576
 Arg Tyr Pro Lys Gly Gln Ala Glu Leu Gln Lys Pro Phe Lys Tyr Thr
 180 185 190

aca gtc acc aag cga tcc cgg cgg atc cgc ccc act cac ccc ggc tag 624
 Thr Val Thr Lys Arg Ser Arg Ile Arg Pro Thr His Pro Gly *
 195 200 205

gtccggccac actcaccccc ccagagaact acatcagagg aatattttta catgaaaaat 684
 aaggaagaat ctctattttt gtacattgtg tttaaaagaa gacaaaaact gaacctaag 744
 tcttgggagg aggggcgata ggattccact gttgacctga accccatgac aaaggactca 804
 cacaagggga ccgctgtcaa cccacaggtg cttgcctctc tctaggaggt gacaattcaa 864
 aactcatccc cagaggagga cttgaacgag gaaactgcga gaaaccaaag tcctttcccc 924
 ccaaaggttc tgaaagcaaa caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 984
 aaaaaaaaaa aaaaaaaaaa gggcggccgc tctagagga 1023

<210> 39

<211> 207

<212> PRT

<213> Mus musculus

<400> 39

Met Tyr Ser Ala Pro Ser Ala Cys Thr Cys Leu Cys Leu His Phe Leu
 1 5 10 15
 Leu Leu Cys Phe Gln Val Gln Val Leu Ala Ala Glu Glu Asn Val Asp
 20 25 30
 Phe Arg Ile His Val Glu Asn Gln Thr Arg Ala Arg Asp Asp Val Ser
 35 40 45
 Arg Lys Gln Leu Arg Leu Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys
 50 55 60
 His Ile Gln Val Leu Gly Arg Arg Ile Ser Ala Arg Gly Glu Asp Gly
 65 70 75 80
 Asp Lys Tyr Ala Gln Leu Leu Val Glu Thr Asp Thr Phe Gly Ser Gln
 85 90 95
 Val Arg Ile Lys Gly Lys Glu Thr Glu Phe Tyr Leu Cys Met Asn Arg
 100 105 110
 Lys Gly Lys Leu Val Gly Lys Pro Asp Gly Thr Ser Lys Glu Cys Val
 115 120 125
 Phe Ile Glu Lys Val Leu Glu Asn Asn Tyr Thr Ala Leu Met Ser Ala
 130 135 140

Lys Tyr Ser Gly Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg Pro Arg
 145 150 155 160
 Lys Gly Pro Lys Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys
 165 170 175
 Arg Tyr Pro Lys Gly Gln Ala Glu Leu Gln Lys Pro Phe Lys Tyr Thr
 180 185 190
 Thr Val Thr Lys Arg Ser Arg Arg Ile Arg Pro Thr His Pro Gly
 195 200 205

<210> 40

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer: ZC17579

<400> 40

aaaggcaagc tcgtggggaa g

21

<210> 41

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer: ZC17578

<400> 41

tcgcttggtg actgtggtgt at

22

<210> 42

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer: ZC19567

<400> 42

atgtattcag cgccctccg

19

<210> 43

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer: ZC19633

<400> 43

cgagcccgcg tctggttct

19

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